![HaeHong logo]

Monarch Windows Application User Guide

Document Details

Purpose	Monarch Windows Application User Guide Tutorial
Scope	UNS Monarch - UNS53000 Multispectral Camera UNS Monarch II - UNS54000 Multispectral Camera
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Table of Contents

1). Overview

This Monarch App software enables the user to evaluate Unispectral's MEMS technology.
By using Unispectral's new EVK, the user will be able to set exposure and gain values, choose specific CWLs, and save the images for further analysis.


2). Requirements

Before starting to work with the software, the user should make sure the following settings are defined properly:

- o USB Connection – make sure the camera is connected directly to a PC and not to a docking station or other adapter.
- o Screen Display Zoom – do not modify the display zoom setting while using the software.

All of these may cause the application to crash mid-operation. these are safety precautions in order to prevent this.

3). Main Screen

The left side bar includes four fields related to the camera control options:
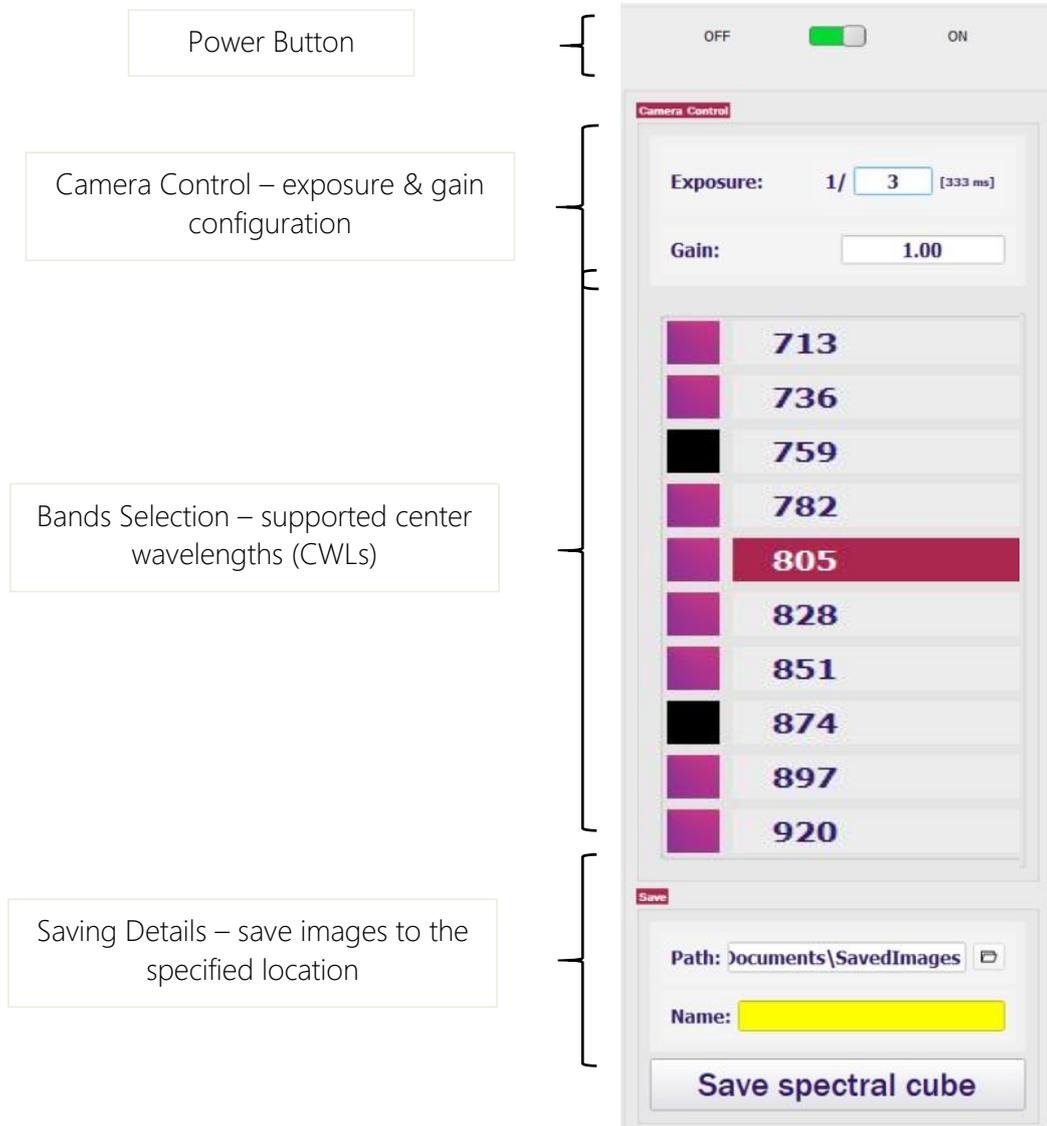
Power Button	OFF ⬜🟢 ON
Camera Control – exposure & gain configuration	**Camera Control** Exposure: 1/ [3] [333 ms] Gain: [1.00]
Bands Selection – supported center wavelengths (CWLs)	713 736 759 782 **805** 828 851 874 897 920
Saving Details – save images to the specified location	**Save** Path:)ocuments\SavedImages 🗀 Name: [ ] **Save spectral cube**

4). Power Button

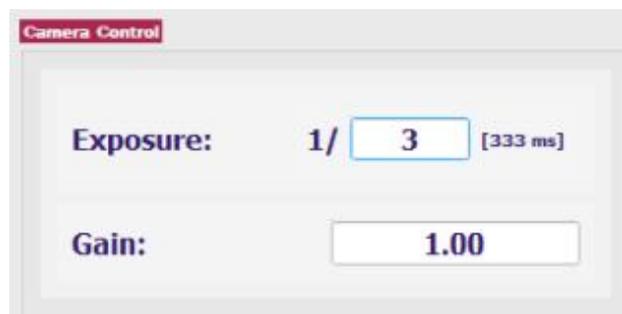The power button is located at the top part of the control bar.
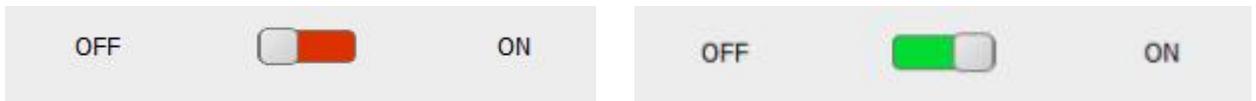
5). Initialization

When turning on the SW, an initialization process will take part right after connecting to camera and should last up to 15 seconds.

6). Camera Control

The Camera Control field allows the user to choose camera settings, i.e. the exposure and gain values of the camera.

6.1). Exposure

The user can choose the exposure value manually, by entering a frames-per-second (FPS) integer value between [2 – 1000] and pressing Enter.
The exposure value is calculated by dividing 1[s] (or 1000[ms]) by the FPS value chosen by the user. The resulting exposure value is shown in the parentheses next to the text field.

Example:
1 / 3 = 1000 [ms] / 3 = 333 [ms]

6.2). Gain

The user can choose the gain value manually, by entering a value between 1 and 10 in the designated Gain text field and pressing Enter.

6.3). Tablet buttons mode

The tablet mode enables to control the gain and exposure values by clicking the - + buttons.

5.3.1   To activate the tablet mode, click on the "Exposure" or "Gain" text label at the left side.

5.3.2   Click again on Exposure: label or Gain label to go back to normal view.

5.3.3   use the +/- buttons to control the camera settings.

5.3.4   Exposure +/- step is 2 and Gain +/- step is 0.1

5.3.5   Click and hold +/- buttons to accelerate the speed to update the value.

7). Bands Selection

7.1 The Bands field allows the user to browse the camera's available CWLs and choose which of them to enable or disable within the spectral cube taken.

7.2 The user can browse the different CWLs by clicking on the desired band. The resulting image will be shown in the viewport. The user can enable or disable a specific CWL by clicking on the square to the left of its value.

7.3 Once a CWL is disabled, its square will turn black. When enabled, the square will turn purple.

7.4 It is highly recommended to keep all 10 bands while capturing the spectral cube. Specific bands removal can be done in the cube analysis stage.
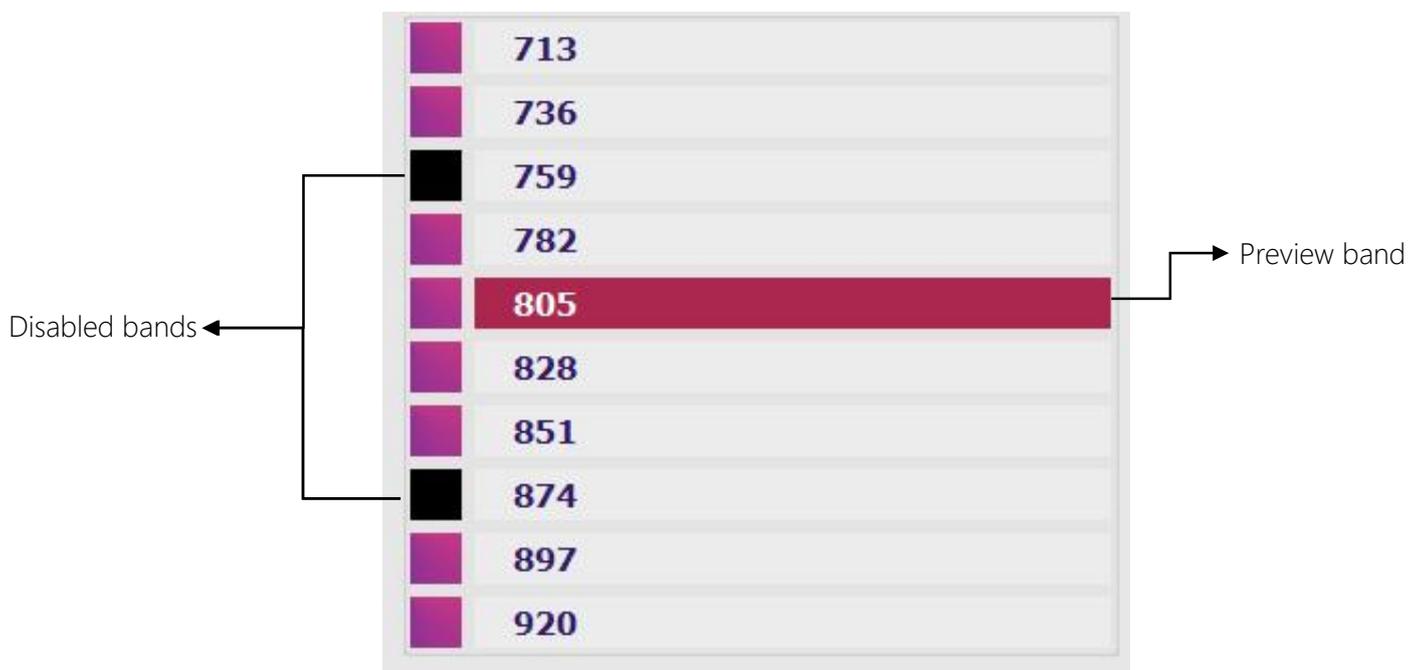
8). Spectral Cube Saving

The Save field allows the user to choose the name and location for saving the spectral cube.

8.1). File Path

8.1.1   Define the spectral cube file's location by either entering it manually in the Path text field, or by browsing using the folder button next to it.

8.2). File Name

8.2.1   The user can enter the spectral cube file's desired name manually in the Name text field. If no name is entered in the text field, the default file name will be "cube".

8.3). File Saving

8.3.1   Save the file by pressing the Save spectral cube button.

8.3.2   Note that the cube's saving time depends on the user's hardware.

8.3.3   Once the button is pressed, the folder symbol next to the Path text field will blink.

8.4). File Name Format

- Once saved, the chosen file name will appear as a folder in the format of: "<File Name Text>_yyyy/mm/dd_hh/mm/ss" in the designated path.
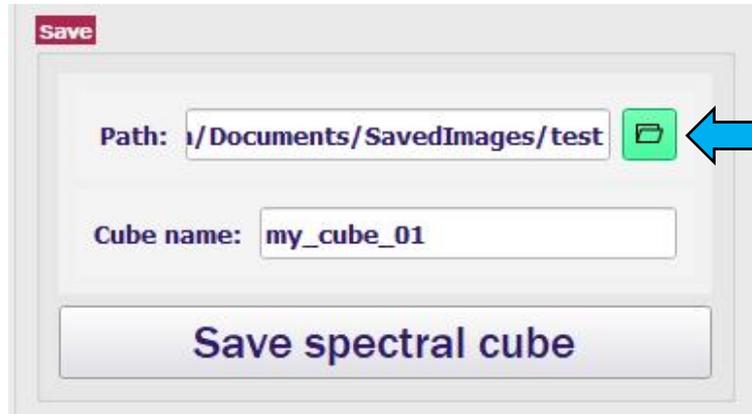
    Example:

    File Name yyyy/mm/dd hh/mm/ss

8.5). Quick access

After saving the spectral cube, the folder icon will turn green as shown below,
Clicking the icon will open the saved file containing folder.

Note:
To disable the quick access button, click on the "Path" text label
and check the checkbox.
* Click again on the "Path" text label to return to default view.

8.6). Saved file content

The saved folder will include the following files:

* 10 PNG files – Used for preview only.
* HDR file – Containing the saved cube Metadata.
* ENVI file – The spectral image raw data.

9). System Information

Click on the Unispectral icon at screen's bottom right corner to open the system information window.